UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/658,862	09/08/2000	Keith Henry Stockman Campbell	112800.301	2555

21269 7590 10/04/2002

PEPPER HAMILTON LLP
ONE MELLON CENTER, 50TH FLOOR
500 GRANT STREET
PITTSBURGH, PA 15219

EXAMINER	
CROUCH, DEBORAH	
ART UNIT	PAPER NUMBER
1632	12

DATE MAILED: 10/04/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/658,862	Applicant(s) STOCKMAN CAMPBELL ET AL.	
	Examiner Deborah Crouch	Art Unit 1632	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *45-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *45-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

Applicant's arguments filed June 19, 2002 in paper no.11 have been fully considered but they are not persuasive. The amendment has been entered. Claims 45-56 are pending.

Applicant's arguments that the presence of the term "cloned" in the claims indicates the "hand of man" requirement for statutory subject matter. Therefore the rejection made in the office action mailed December 19, 2001 in paper no. 6 is withdrawn.

The rejections made in the office action mailed December 19, 2001 in paper no. 6 under 35 U.S.C. 112, second paragraph have been overcome by applicant's amendment to the claims and to the definition of "abstracted" (Response, filed June 19, 2002, paper no. 7, page 7, parag, 1)

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 45-56 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 56-91 of copending Application No. 09/225,233. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

The claims are to a product, nonhuman embryo clones and nonhuman mammalian clones, produce by process. While the process steps themselves are obvious over each other, the products are identical.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 45-56 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11-18 of U.S. Patent No. 6,252,133 B1. An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim not is patentably distinct from the reference claim(s) because the examined claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985). Although the conflicting claims are not identical, they are not patentably distinct from each other because the presently claimed cloned nonhuman embryos and cloned nonhuman mammals are made a process claimed in '133.

The present claims are drawn nonhuman embryo clones and nonhuman mammal clones that contain the same set of chromosomes as a pre-existing, nonhuman, non-embryonic mammal. The embryo clone is produced by nuclear transfer of a diploid donor cell in the G1 phase of the cell cycle into an MII oocyte of the same species as the cell,

followed activation and culture. To produce the mammal, the embryo clone is transferred to a recipient female of the same species as the cell. The donor cell is from a pre-existing, nonhuman, non-embryonic mammal. Claims 11-18 of '133 are to methods of reconstructing an embryo of a nonhuman mammal comprising a donor diploid cell in the G1 phase of the cell cycle into an unactivated, enucleated MII phase oocyte of the same species as the cell, maintaining the reconstructed embryo without activation in the presence of a mcirotubule stabilizer or inhibitor, activating the reconstructed embryo, and, transfer the reconstructed embryo to a female of the same species, to produce the mammal. The donor cells of the present claims fall within the scope of "diploid donor cell" of the claims in '133, and donor cells are defined in the specification as coming from a pre-existing, nonhuman mammal non-embryonic mammal. An incubation step with microtubule stabilizers or inhibitors is defined in the present specification, activation is defined in the present specification as taking place with or without the stabilizers or inhibitors, and activation is defined as being by fusion. '133 claims a mammal is produced by transferring the embryo to a female mammal of the same species.

Therefore, at the time of the instant invention, it would have been obvious to the ordinary artisan to produce a cloned nonhuman embryo or a cloned nonhuman mammal as presently claimed given the method steps of claims 11-18 in '133.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 45-48 remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent 5,057,420 issued October 15, 1991 (Massey) for reason set forth in the office action mailed December 19, 2001 in paper no. 6.

Massey teaches bovine embryos isolated from cows that have been artificially inseminated (col. 3, lines 18-31). Bovine embryos encompassed by the present claims and made by a particular process of the claims do not have a property that distinguishes them from those bovine embryos taught by Massey. That the claimed embryos have the same set of chromosomes as a nonhuman, non-embryonic mammal does not provide a distinguishing feature to the resultant embryo, as the source of the embryo's chromosomes does not affect the embryo.

Applicant argues that the embryos of Massey cannot anticipate because Massey's embryos are missing a material limitation to the claimed embryos in that Massey's embryos are not clones. Applicant argues that the embryos of Massey and the claimed embryos cannot be considered identical or substantially identical in structure or composition to Massey's embryos. Applicant argues that the claimed embryos are the progeny of one parent, have the same set of chromosomes as that parent, and that they are asexually produced. Applicant argues that an embryo's characteristics are defined by its chromosomes together with environmental factors. In support of this statement applicant has submitted a definition of phenotype as being the observable characteristics of an individual as result of interaction between the genotype of an individual and the environment in which the development occurs. Applicant argues that the source of an embryo's chromosomes has a profound effect on an embryo's characteristics. Applicant argues that an embryo that receives its set of chromosomes through sexual reproduction from two parents will not be

identical or substantially identical to an embryo clone that receives its set of chromosomes asexually through cloning. Only the embryo that receives its complement of chromosomes through cloning from a single parent will be a clone of that parent. Applicant argues that Massey's embryos have a mixture of genetic material from two parents. Applicant argues that as Massey's embryos are not clones. Applicant argues that the claimed embryos and mammals had never existed prior to the present invention. Applicant also argues that due to environmental factors, applicant's clones would have different fingerprints, different irises, different retina and different skin and fur pigmentation pattern. Applicant offers Prather et al, U.S. Patent 4,641,349 and Wells et al as support for the concept that a clone will never be identical to its parent. These arguments are not persuasive.

The presently claimed embryos are a product by process claim. The source of the chromosomes is part of the process. The concept of cloning by nuclear transfer is understood sufficiently to understand that the gist of applicant's arguments is that through the process of nuclear transfer using a differentiated, somatic cell as nuclear donor that they have produced a product not known before. However, the presently claimed products are not seen as having any distinction between them. In a side-by-side comparison, an embryo produced by the method of Massey would look and behave identically to an embryo of the present claims. The structure and composition of the claimed embryos would be identical or substantially identical to those of Massey. The embryo of the claims would consist of a single nucleus per cell, multiple cells and both would develop into a blastocyst. This is the structure and composition of the embryo. The source of the chromosomes whether the result of fertilization of an ova or the result of nuclear transfer, in the embryo, the source of genome cannot be distinguished. One cannot simply look at the genome of embryos and discern those genomes that are the result of fertilization and those that are

the result of nuclear transfer. Thus, the mixture of genetic material from male and female parents, as in the case of Massey, or the donation by a differentiated, somatic cell, as presently claimed, does not affect a phenotype of an embryo. Whether the embryo is produced by fertilization or by nuclear transfer, the resultant embryo has the same structure, same function, and same developmental potential. Applicant has not provided any evidence that the present embryos are phenotypically different from those of Massey. It is noteworthy that both applicant's embryos and Massey's embryos developed into progeny. This also provides additional evidence that the developmental potential of applicant's and Massy's embryos are the same. This in turn lends credence to the rejection by a demonstration that both embryos, although made by materially different and separate protocols, function the same. Applicant has not pointed to any phenotype, structural, developmental differences between the claimed embryos and those of Massey. It is noted that environmental factors, as described by applicant, affect the resultant offspring, and not the embryos. Embryos do not have fingerprints, irises, retina, skin or fur. The rejection is maintained because applicant has not shown a difference between the embryos of Massey and the presently claimed embryos. While the methods of making the embryos of applicant and Massey are distinct, the resulting embryos are not distinguishable. Applicant's embryos did in fact exist prior to their invention. Applicant's embryos and mammals are clones of embryos existed prior to the claimed invention. The claims state that.

Claims 49-52 remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by The Science of Providing Milk for Man, Campbell and Marshall, McGraw Hill Book Co., New York, 1975, pages 48, 49, and 51-56 for the reasons presented in the office action mailed December 19, 2001 in paper no. 6.

At pages 48,49 and 51-56, Campbell and Marshall teach several different bovines that existed prior to applicant's invention. A bovine produced by the claimed methods would not be patentably distinct from any one of the bovines of Campbell and Marshall as the method of producing does not provide a patentably distinguishing feature to the claimed mammal. That the claimed mammals have the same set of chromosomes as a nonhuman, non-embryonic mammal does not provide a distinguishing feature to the resultant mammal, as the source of the mammal's chromosomes does not affect the mammal.

Applicant argues that the bovines of Campbell and Marshall are sexually produced, and therefore have a mixture of the genetic material of two parents. Applicant argues that the bovines of Campbell and Marshall not clones of a single parent. Applicant refers to the response to the rejection of embryo claims over Massey. These arguments are not persuasive.

Applicant has not pointed to structural difference between the bovines of Campbell and Marshall and the mammals of the claims, which encompass bovines. In a side-by-side comparison, there is no discernable structure, physical, biochemical, physiological or use of the claimed mammals over the bovines of Campbell and Marshall. Applicant has not argued any phenotypic differences to the mammals claimed due to the process of making them, and no such differences are disclosed in the specification. The definition of phenotype provided (Ayala) is that such effects during development can occur, not that they due occur. While the mammals of the claims may have different irises, and the like, these distinctions does alter the ability of the eye to see, the fur to protect. The mammals of the claims function and behave as those bovines of Campbell and Marshall. At least applicant has not argued or disclosed any such differences. The difference has to be to the embryos themselves. Further, Applicant's mammals did in fact exist prior to their invention.

Applicant's mammals are clones of embryos and mammals that existed prior to the claimed invention. The claims state that.

Claims 45-52 remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by Sims et al. (1993) Proceed. Natl. Acad. Sci. 90, 6143-6147 for the reasons presented in the office action mailed December 19, 2001.

Sims teaches the production of bovines and bovine embryos by nuclear transfer, where the donor nucleus is from a bovine cultured inner cell mass cell (page 6145, col. 2, parag. 2, lines 1-7 and page 6146, col. 1, parag. 2, lines 6-11). The source of the donor nucleus, be it bovine inner cell mass cell or a non-embryonic cell as claimed, does not provide a patentable distinction on the resulting bovine embryo or bovine. The source of the donor nucleus does not alter the bovine embryo or bovine such that the bovine embryo or bovine encompassed by applicant's claims is patentable distinct from those of Sims et al. Indeed, the bovine embryo and bovine of Sims contains the same set of chromosomes as a non-embryonic bovine of the same species, that is the same chromosomes as the donor bovine.

Applicant argues that the bovines of Sims cannot anticipate the presently claimed bovines because the bovines of Sims do not have every element of the claims. Applicant argues that the claimed embryos and mammals are clones of a pre-existing, non-embryonic parent and have the same set of chromosomes as that preexisting, non-embryonic parent. Applicant argues that Sims' bovines and embryos were made by nuclear transfer from an embryonic, cultured inner cell mass cell, and have the same chromosomes of the cultured inner cell mass cell. Applicant argues that the inner cell mass cells received its set of chromosomes from two parents. Applicant argues that Sims' bovines and embryos cannot anticipate the claimed mammals and embryos because Sims' bovine and embryos have a

mixture of genetic material from two non-embryonic parents, and are not clones of a preexisting non-embryonic parent. These arguments are not persuasive.

The bovines and embryos of Sims are were cloned by nuclear transfer from inner cell mass cells isolated from a bovine embryo made by in vitro fertilization. However, the source of the nuclear donor has not been established by applicant nor the art to provide a structural, phenotypic, biochemical or any other difference to the embryo or bovine claimed. If one were to observe the bovines and embryos of Sims' next to those of applicant, there would be no difference. The bovines and embryos of Sims' and those of applicant, as presently claimed, function the same biochemical, physiologically and every other way. Once an embryo develops from an NT unit, it is the same as an embryo produced by fertilization. The same is true for the bovines. A bovine produced by NT of an embryonic cells, as in Sims' and a bovine produced by NT of an differentiated, somatic cell, are the same. Applicant has not established that there are any phenotypic differences between the embryos and bovines of Sims and the embryos and bovines encompassed by their claims. Even if there were differences in irises, retina and/or fur between the bovines of Sims and those of the claims, the eyes would still see and the fur would still protect. Applicant should point to specific structural difference to the bovine or bovine embryo that is a result of the nuclear transfer.

Claims 53-56 remain rejected under 35 U.S.C. 102(b) as being clearly anticipated by WO 95/17500 published 29 June 1995 (Stice).

Stice teaches transgenic nonhuman mammalian embryos and transgenic nonhuman mammals produced by nuclear transfer where the nuclear donor is an embryonic cell comprising a genetic modification (page 33, lines 14-24). The source of the donor nucleus, be it a genetically modified nonhuman embryonic cell as Stice teaches or a genetically

modified non-embryonic, nonhuman mammalian cell as claimed, does not provide a patentable distinction on the resulting genetically modified nonhuman embryo or genetically modified nonhuman mammal. The source of the donor nucleus does not alter the embryo or mammal such that the embryo or mammal encompassed by applicant's claims is patentable distinct from those of Stice et al. Further, Stice teaches that the cells are cultured *in vitro* and are abstracted *ex vivo* (page 6144, 1, 8-15).

Applicant argues that the mammals and embryos of Stice are not clones of pre-existing, non-embryonic parents and thus do not anticipate the presently claimed mammals. Applicant argues that their embryos and mammals are clones of a pre-existing, non-embryonic parent. Applicant argues that the embryonic cell nuclear donor's genetic material came from two parents, not one as presently claimed. These arguments are not persuasive.

The mammals and embryos of Stice were cloned by nuclear transfer of embryonic cells isolated from an embryo. The mammals and embryos of Stice, if placed next to those of applicant, a difference could not be seen. The mammals and embryos of Stice and those of applicant, as presently claimed, function the same biochemical, physiologically and every other way. Once an embryo develops from an NT unit, it is the same as an embryo produced by fertilization. The same is true for mammals. A mammal produced by NT of an embryonic cells, as in Stice and a mammal produced by NT of an differentiated, somatic cell, are the same. Applicant has not established that there are any phenotypic differences between the embryos and mammals of Stice and the embryos and mammals encompassed by their claims. Even if there were differences in irises, retina and/or fur between the bovines of Stice and those of the claims, the eyes would still see and the fur would still protect. Applicant should point to a specific structural difference between the transgenic mammals of Stice and those claimed.

All of applicant's arguments, for each of the above rejections, hinge on their belief that the claimed method of producing provides distinction between the presently claimed embryos and mammals and those embryos and mammals produced by fertilization and subsequent embryonic cell isolation followed by nuclear transfer. Applicant's argue that the source of the genetic material from a pre-existing, non-embryonic parent, as presently claimed, provides distinction over the instance where the genetic material is from an embryonic cell whose origins were by mixture of two parental genomes, as disclosed by the art.

> MEPE 2113 address specifically produce by process claims, and states: [E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

Applicant has not established either through disclosure or argument that the claimed embryos and mammals are different from the previously made embryos and mammals in the cited art. Specific structural or other differences to the claimed embryos and mammals should be point out by applicant as to their specification location. Further, Applicant's mammals did in fact exist prior to their invention. Applicant's mammals are clones of embryos and mammals that existed prior to the claimed invention. The claims state that.

Applicant did not provide any arguments regarding, Prather et al, U.S. Patent 4,641,349 and Wells et al. Thus the examiner does not know how applicant believes these references distinguish applicant's embryos and mammals from the cited prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Reynolds, SPE of AU 1632 whose telephone number 703-305-4051. The examiner can normally be reached on M-Th.

The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-4242 for regular communications and 703-308-4242 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0916.

Deborah Crouch

Deborah Crouch, Ph.D.
Primary Examiner
Art Unit 1632

D.C.
September 29, 2002